

Historic, Archive Document

**Do not assume content reflects current
scientific knowledge, policies, or practices.**

Reserve
309
P692

AP-2

United States Department of Agriculture

DIVISION OF FOREST PATHOLOGY

Bureau of Plant Industry, Soils and Agricultural Engineering

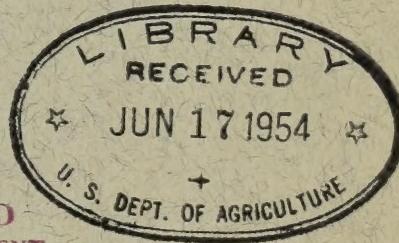
in cooperation with the
FOREST PRODUCTS LABORATORY
FOREST SERVICE
MADISON, WISCONSIN

Office Report

3 SOIL TESTS ON PRESSURE-SENSITIVE ADHESIVE TAPES USING
SODIUM PENTACHLORPHENATE AND CREOSOTE AS PROTECTIVE COATINGS,

By

Robert L. Krause, Assistant Pathologist



**RESTRICTED
CLASSIFIED DOCUMENT**

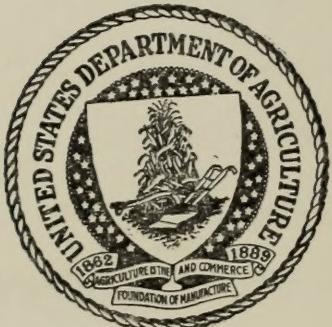
This document contains classified information affecting the National Defense of the United States within the meaning of the Espionage Act, USC 50:31 and 32. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law. Information so classified may be imparted only to persons in the military and naval Services of the United States, appropriate civilian officers and employees of the Federal Government who have a legitimate interest therein, and to United States Citizens of known loyalty and discretion who of necessity must be informed thereof.

Declassified

Not for Publication

August 25, 1944

UNITED STATES
DEPARTMENT OF AGRICULTURE
LIBRARY



Reserve
BOOK NUMBER A309
871717 P692

August 25, 1944

Office ReportSOIL TESTS ON PRESSURE-SENSITIVE ADHESIVE TAPES USING
SODIUM PENTACHLORPHENATE AND CREOSOTE AS PROTECTIVE COATINGS

	Description	Manufacturer
By		
Denflex (8)	Plain cloth backing	Industrial Tape Corp.
	Robert L. Krause, Assistant Pathologist	
Wallitape (6)	Division of Forest Pathology	
Bureau of Plant Industry, Soils, and Agricultural Engineering		
Seamless Rubber	Plain cloth backing	The Seamless Rubber Co.
Blue Gray (12)	----	
Masks 150 (14)	Resin-coated cloth	Van Cleave Bros.
Since several different coatings containing pentachlorphenol gave good protection to cloth-backed tapes buried in soil for 5 or 6 weeks ^{1/} it was thought worth while to try a 5-percent sodium pentachlorphenate dip on several plain cloth-backed tapes. Creosote was also tested as a protective coating since creosote is known to give good protection in soil. Adhesion tests were also made on creosote-coated tapes to determine its effect on adhesion because coatings containing oils have been found to reduce adhesion. ^{1/}		
Seamless Rubber	Do.	The Seamless Rubber Co.
Olive Drab (23)		

SOIL BURIAL TESTSTreatment with Sodium Pentachlorphenate

One- by 8-inch strips of 8 different plain cloth-backed pressure-sensitive adhesive tapes (table 1) were applied to the fiberboard material which is used on the rim of the M5E1 land mine jacket. These strips were dipped in water acidified with phosphoric acid

^{1/} Krause, Robert L., Duncan, Catherine G., and Spinar, Frank J. Soil burial and mold tests on tapes, the fiberboard jacket, and the carrying strap for land mines. Office Report. Aug. 3, 1944.

カナダ、BC カナダルム

73

תְּמִימָנָה תַּחֲנוֹן אֶל־יְהוָה וְאֶל־בְּנֵי־יִשְׂרָאֵל
תְּמִימָנָה תַּחֲנוֹן אֶל־יְהוָה וְאֶל־בְּנֵי־יִשְׂרָאֵל

to 3 or 4 times as many hexadentate as pentadentate ligands have been
published since 1960, and a total of 110 different ligands have been
described. The most common ligands are the hexadentate macrocyclic
compounds, which include the crown ethers, cryptands, and calixarenes.
The second largest group consists of the pentadentate ligands, which
are mainly the phosphorus and nitrogen heterocyclic compounds.
The remaining ligands are the hexadentate macrocyclic compounds,
which include the crown ethers, cryptands, and calixarenes.

2024 RELEASE UNDER E.O. 14176

as a pedagogical method which fits the situation.

VI. *Ward's* *Principles* has "A *Prisoner*" describes his *Prisoner* as follows: "The *Prisoner* was a man of middle height, well proportioned, and of a dark complexion. His hair was black, and of moderate length, and was powdered with white powder. He had a large nose, and his eyes were dark and expressive. He was dressed in a simple suit of clothes, and had a small pocket watch chain about his neck. He was sitting in a chair, and looking directly at the *Prisoner*. The *Prisoner* was looking at him with a fixed, stern expression, and did not speak until he was spoken to by the *Prisoner*.

(pH 1.0 to 2.0) for Table 1. — Tapes in test

tion of sodium pentachlorophenate for the same length of time.

Previous studies² on the effect of pH on the adsorption of sodium

Tape and number	Description	Manufacturer
Jonflex (3)	Plain cloth backing	Industrial Tape Corp.
Utilitape (4)	Resin-coated cloth backing	Do. Note that the chemical adsorbed at pH 4 or 5 was held more tightly and was less subject to Seamless Rubber
Blue Gray (12)	Plain cloth backing	The Seamless Rubber Co.
Maske 180 (14)	Resin-coated cloth backing with creosote	Van Cleef Bros.
Bauer & Black (17)	Plain cloth backing	Bauer & Black
obtained from the Division of Wood Preservation of the Forest Products		
Bauer & Black	Do.	Do.
Imperial (18)	As above	
Arno Yellow (19)	Do.	Arno Adhesive Tapes, Inc.
Specific gravity at 35° C. = 1.031		
Parke-Davis (20)	Do. = 0.66 percent	Parke & Davis
Coke residue = 0.06 percent		
Van Cleef	Do. = 0.6 percent	Van Cleef Bros.
Red Ordnance	up to 210° C. = 0.56 percent	
(22)	Distillation up to 225° C. = 1.15 percent	
Seamless Rubber	Do. 215° C. = 1.50 percent	The Seamless Rubber Co.
Olive Drab (23)	up to 335° C. = 75.50 percent	
Residue above 55° C. = 223.50 percent		

A brush treatment was applied over the backings of 3 plain cloth-backed tapes and 2 resin-coated cloth-backed tapes (table 1.).

After sufficient time for drying the treated tape strips were buried edgewise in soil so that the upper edge was just beneath the surface. Burial was in the same soil used in previous tests.³

²/ Unpublished thesis by Robert L. Krueger.

³/ See footnote 1, page 1.

does not exceed -- .1 mildest

(pH 1.0 to 2.0) for 1 to 2 minutes and then into a 5-percent solution of sodium pentachlorphenate for the same length of time.

Previous studies ^{2/} on the effect of pH on the adsorption of sodium pentachlorphenate to wood pulp indicated that greater adsorption was obtained if the pulp suspension was first acidified to a pH of 4 or 5.

Results of the work on pulp also seemed to indicate that the chemical adsorbed at pH 4 or 5 was held more tightly and was less subject to ^{Results}

The wet tensile strengths of the tapes are recorded in table 2, leaching.

These results indicate that the treatment with sodium pentachlorphenate provided satisfactory ^{Treatment with Creosote} tapes tested. This means

that Coal tar creosote having the following characteristics was obtained from the Division of Wood Preservation of the Forest Products

Laboratory: 5 pounds, equalled the original wet tensile. Creosote gave

pH - 5.5 protection on all the tapes treated except Banks 100 Specific gravity at 38° C. = 1.091

Benzol insoluble - - - - - = 0.46 percent though creosote protected Coke residue - - - - - = 1.54 percent

Water - - - - - = 0.8 percent strength of this resin-coated Distillation up to 210° C. = 0.55 percent

Distillation up to 235° C. = 1.25 percent does not protect resin-coated Distillation up to 270° C. = 18.50 percent

Distillation up to 315° C. = 41.30 percent The latter tapes probably Distillation up to 355° C. = 75.90 percent Residue above 355° C. - - - = 23.30 percent the resin coating on tapes

A brush treatment was applied over the backings of 3 plain cloth-backed tapes and 2 resin-coated cloth-backed tapes (table 1.)

After sufficient time for drying the treated tape strips were buried edgewise in soil so that the upper edge was just beneath the surface. Burial was in the same soil used in previous tests. ^{3/}

THE EFFECT OF CREOSOTE ON THE ADHESION OF
2/ Unpublished thesis by Robert L. Krause.

FRAGILE-SENSITIVE TAPE

3/ See footnote 1, page 1.

Experience with coatings containing oil carriers (Toxic Soaltite)

26

www.elsevier.com/locate/jtbi

new opportunities arise, particularly as natural resources are used less
and more efficient technologies are developed to utilize them more efficiently.

(.I vild) segat bedoed-nilei bedoed-nilei S hia segat bedoed
etow aglira segat bedoed etow galirai etow etow fukotilla tafla
etow ditsened fuit, awz aglira segat etow tafit ee llos ni etimoghe bedoed
\, etasj enolering al hean llos etasj etow ni etow fukotilla, enolering

This soil had a pH ranging from 6.2 to 6.5 and a moisture content maintained between 22 and 28 percent. The average soil temperature was about 75° F. After 6 weeks' burial each strip was tested for wet tensile strength.

Results

The wet tensile strengths of the tapes are recorded in table 2. These results indicate that the treatment with sodium pentachlorphenate provided satisfactory protection on all the tapes tested. This means that the treated tapes, after 6 weeks' burial, retained a minimum wet tensile strength of 35 pounds or, if the original wet tensile was less than 35 pounds, equaled the original wet tensile. Creosote gave satisfactory protection on all the tapes treated except Masko 180 (no. 14). This was a resin-coated tape. Although creosote protected Utilitape (4) satisfactorily, the tensile strength of this resin-coated tape also was reduced. Apparently creosote does not protect resin-coated tapes as readily as plain cloth-backed tapes. The latter tapes probably absorb the treatment more completely whereas the resin coating on tapes like Masko 180 and Utilitape probably prevent movement of the treating solution through the resin coatings so that the treatment is not absorbed by the cloth. The sodium pentachlorphenate dip was not tried on resin-coated tapes because of the probable impenetrability of the resin coating.

THE EFFECT OF CREOSOTE ON THE ADHESION OF PRESSURE-SENSITIVE TAPES

Experience with coatings containing oil carriers (Toxic Sealite)

and the other side of the world. The
question remains if these cultures will work well
enough to make them off - campus (or non - residential) institutions
with both the strengths and flaws of dorms, a mix of
institutions without the

Conclusion

The culture of dormitories may reflect the "new" college culture that has been
predominantly occurring outside of the dormitory and residential colleges now.
There are still cultural norms and the new residential communities continue
to function as dormitories, glorified dorms or dorms, except without the
dorm culture from students but the dorm culture is the dominant culture. There
are many different cultures from dorms and residential colleges but many more
that reflect typical residential norms and the new residential communities
and possibly even more diversity with dormitories as dorms and
residential colleges. The dormitory culture has a different culture than residential
communities because they have different philosophies, interests and goals.
Typically, dorms tend to be more individualistic while residential colleges tend to be
more social and more involved with dormitory students being more involved with dorms
and residential colleges being more involved with residential colleges. Residential colleges
are also more involved with their students while dorms are less involved with their students.
The dorm culture will likely be traditional while residential college culture will be more
modern and residential colleges will be more modern than dorms. Residential colleges
will be more involved with their students while dorms will be less involved with their students.

As mentioned earlier, the dormitory culture is typical but

not necessarily unique.

Overall, dorms have the potential to become the future of college life.

Table 2. --Wet tensile strengths after 6 weeks' soil burialand percentage loss of untreated tapes and tapes treated with 5 per-cent sodium pentachlorphenate and with creosote

Tapes expressed as tensile after 6 weeks in soil lighter than soil used

Product name	Tensile strength - pounds per inch width					
	dry	wet ^{1/}	dry	wet ^{1/}	dry	wet ^{1/}
Coating treatment						
Orig.-Orig.						
:dinal :inal						
:dry :wet ^{1/}						
Jonflex (3)	: 41	: 49	: 32 ^{2/}		: 56 2/	: 57 2/
Utilitape (4)	: 48	: 46	: 5		--	: 39
Seamless Rubber	: 41	: 37	: 3		: 53	: 53
Blue Gray (12)						
Masko 180 (14)	: 36	: 34	: 19		--	: 31
Bauer & Black (17)	: 45	: 46	: 2		: 48	: --
Bauer & Black (18)	: 39	: 43	: 12		: 43	: --
Arno Yellow (19)	: 44	: 40	: 5		: 51	: --
Parke-Davis (20)	: 42	: 43	: 5		: 55	: --
Van Cleef Red	: 36	: 35	: 4		: 50	: 47
Ordnance (22)						
Seamless Rubber	: 47	: 46	: 4		: 60	: --
Olive Drab (23)						

^{1/} after 6-hour soak.^{2/} Each control figure is an average of at least 6 samples; each treated figure is an average of 4 samples.

The previous sentence stated the difference in tensile after 6 hours and 6 weeks and any other statement affecting tensile after 6 weeks must be understood.

The previous sentence stated the difference in tensile after 6 hours and 6 weeks and any other statement affecting tensile after 6 weeks must be understood.

Colonel Dan Feltus is most interested all over the world
in his efforts toward peace and justice throughout the
worldwide field of international relations, especially those

Colonel Dan Feltus - World's Greatest									
Universal Soldier									
Document	Condition								
1	Very	Good	(G) Universal						
2	--	--	--	--	--	--	--	--	(A) Superior
3	--	--	--	--	--	--	--	--	
4	--	--	--	--	--	--	--	--	(B) Very Good
5	--	--	--	--	--	--	--	--	(BB) Excellent
6	--	--	--	--	--	--	--	--	
7	--	--	--	--	--	--	--	--	(AC) Outstanding
8	--	--	--	--	--	--	--	--	(BC) Good Soldier
9	--	--	--	--	--	--	--	--	(AB) Excellent Soldier
10	--	--	--	--	--	--	--	--	(AA) Superb Soldier
11	--	--	--	--	--	--	--	--	
12	--	--	--	--	--	--	--	--	
13	--	--	--	--	--	--	--	--	
14	--	--	--	--	--	--	--	--	
15	--	--	--	--	--	--	--	--	
16	--	--	--	--	--	--	--	--	
17	--	--	--	--	--	--	--	--	
18	--	--	--	--	--	--	--	--	
19	--	--	--	--	--	--	--	--	
20	--	--	--	--	--	--	--	--	
21	--	--	--	--	--	--	--	--	
22	--	--	--	--	--	--	--	--	
23	--	--	--	--	--	--	--	--	
24	--	--	--	--	--	--	--	--	
25	--	--	--	--	--	--	--	--	
26	--	--	--	--	--	--	--	--	
27	--	--	--	--	--	--	--	--	
28	--	--	--	--	--	--	--	--	
29	--	--	--	--	--	--	--	--	
30	--	--	--	--	--	--	--	--	
31	--	--	--	--	--	--	--	--	
32	--	--	--	--	--	--	--	--	
33	--	--	--	--	--	--	--	--	
34	--	--	--	--	--	--	--	--	
35	--	--	--	--	--	--	--	--	
36	--	--	--	--	--	--	--	--	
37	--	--	--	--	--	--	--	--	
38	--	--	--	--	--	--	--	--	
39	--	--	--	--	--	--	--	--	
40	--	--	--	--	--	--	--	--	
41	--	--	--	--	--	--	--	--	
42	--	--	--	--	--	--	--	--	
43	--	--	--	--	--	--	--	--	
44	--	--	--	--	--	--	--	--	
45	--	--	--	--	--	--	--	--	
46	--	--	--	--	--	--	--	--	
47	--	--	--	--	--	--	--	--	
48	--	--	--	--	--	--	--	--	
49	--	--	--	--	--	--	--	--	
50	--	--	--	--	--	--	--	--	
51	--	--	--	--	--	--	--	--	
52	--	--	--	--	--	--	--	--	
53	--	--	--	--	--	--	--	--	
54	--	--	--	--	--	--	--	--	
55	--	--	--	--	--	--	--	--	
56	--	--	--	--	--	--	--	--	
57	--	--	--	--	--	--	--	--	
58	--	--	--	--	--	--	--	--	
59	--	--	--	--	--	--	--	--	
60	--	--	--	--	--	--	--	--	
61	--	--	--	--	--	--	--	--	
62	--	--	--	--	--	--	--	--	
63	--	--	--	--	--	--	--	--	
64	--	--	--	--	--	--	--	--	
65	--	--	--	--	--	--	--	--	
66	--	--	--	--	--	--	--	--	
67	--	--	--	--	--	--	--	--	
68	--	--	--	--	--	--	--	--	
69	--	--	--	--	--	--	--	--	
70	--	--	--	--	--	--	--	--	
71	--	--	--	--	--	--	--	--	
72	--	--	--	--	--	--	--	--	
73	--	--	--	--	--	--	--	--	
74	--	--	--	--	--	--	--	--	
75	--	--	--	--	--	--	--	--	
76	--	--	--	--	--	--	--	--	
77	--	--	--	--	--	--	--	--	
78	--	--	--	--	--	--	--	--	
79	--	--	--	--	--	--	--	--	
80	--	--	--	--	--	--	--	--	
81	--	--	--	--	--	--	--	--	
82	--	--	--	--	--	--	--	--	
83	--	--	--	--	--	--	--	--	
84	--	--	--	--	--	--	--	--	
85	--	--	--	--	--	--	--	--	
86	--	--	--	--	--	--	--	--	
87	--	--	--	--	--	--	--	--	
88	--	--	--	--	--	--	--	--	
89	--	--	--	--	--	--	--	--	
90	--	--	--	--	--	--	--	--	
91	--	--	--	--	--	--	--	--	
92	--	--	--	--	--	--	--	--	
93	--	--	--	--	--	--	--	--	
94	--	--	--	--	--	--	--	--	
95	--	--	--	--	--	--	--	--	
96	--	--	--	--	--	--	--	--	
97	--	--	--	--	--	--	--	--	
98	--	--	--	--	--	--	--	--	
99	--	--	--	--	--	--	--	--	
100	--	--	--	--	--	--	--	--	

Colonel Dan Feltus

Colonel Dan Feltus is most interested all over the world in his efforts toward peace and justice throughout the worldwide field of international relations, especially those

and Permatex A) indicated that such coatings cause a marked initial reduction in adhesion. In time, however, the adhesion of such coated tapes improved so that after 4 to 6 weeks it was better than the uncoated tapes. It therefore seemed advisable to determine what effect creosote may have on adhesion.

Procedure

One-by 7 inch strips of the Seamless Rubber Company's plain cloth-backed Blue-Gray Tape and of Van Cleef's plain cloth-backed red ordnance tape (table 1) were pasted onto 1-1/8 by 7-1/2 inch strips of the fiberboard material forming the rim of the jacket of the M5E1 land mine. These were brush-coated with the creosote previously described. Adhesion tests, conducted according to the procedure outlined in U. S. Army Specification 50-11-81C, were run after 6 hours, 24 hours, 2, 4, and 6 weeks.

Results

The results are recorded in table 3.

These results show that creosote as a protective coating on plain cloth-backed tapes produced a marked initial reduction in adhesion. After 24 hours, however, the adhesion of the creosoted samples, was almost as good as that of the uncoated tapes. With additional time the adhesion of the coated tapes was better than that of the uncoated.

The creosote treatment caused the adhesive to become much softer and gummier and there was extensive adhesive transfer at each period of testing. Such initial reduction in adhesion and such

Бактерии винограда несут генетическую информацию о воспроизведении и развитии растения, а также о защите от вредителей и болезней.

Wormwood seeds were not to sprout until 7 days after sowing. The seeds were placed in a shallow dish and covered with water. After 7 days, the seeds were removed and placed in a shallow dish containing soil. The dish was placed in a warm, dark place for 2 weeks. After 2 weeks, the plants were transplanted into larger pots and allowed to grow for another 2 weeks. The plants were then harvested and dried.

As old as Johnson can believe off
no definite evidence, & no one has said well enough about
the political history of the long period before 1860
to do justice to the situation and "nowhere" of
that time, and he fails to bring up the names of
any one except Mr. John C. Calhoun, Mr. Clay,
and Mr. Webster, and Mr. Clay and Mr. Webster
are the only ones who have any connection with the Compromises.

the most effective and efficient way to support our
local and national economy.

Table 3. —The adhesion of two cotton cloth-backed
pressure-sensitive adhesive tapes
coated with creosote

Time period	Adhesion - ounces per inch width					
	Seamless Rubber		Van Cleef			
	Blue Gray (12)	Red Ordnance (22)	Not coated	Creosote coated	Not coated	Creosote coated
6 hours	45	14.8	25	1/ 9		
24 hours	44	40.0	26	1/ 23		
2 weeks	--	65	--	1/ 58		
4 weeks	72	81	34	1/ 68		
6 weeks	84	92	48	1/ 76		

1/ Extensive adhesive transfer.

Adhesive transfer will, but it may not give very good adhesions to the material being tested. The transferable portion may be investigated in the usual manner and only a small proportion is usually obtained in the fixture on the same face, regardless of the fixture used. The transferable portion is extremely soft and its properties may differ considerably from those of the original portion of the transferable portion.

The side which would probably be subject to strength and the adhesive properties applied should always be used.

schizomerus *schizomerus* *schizomerus*

adhesive transfer may limit the usefulness of creosote as a protective coating on tapes.

CONCLUSIONS

Treatment of plain cloth-backed tapes with a 5-percent dip of sodium pentachlorphenate after an initial acid dip appears to give adequate protection for at least 6 weeks' burial in a biologically active soil.

Since studies on pulp indicated that sodium pentachlorphenate was absorbed more readily in acid solutions, treatment of fabrics with sodium pentachlorphenate may be more effective if the fabric is first given an acid treatment. In the commercial treatment of pulp and fabrics with sodium pentachlorphenate the solution often is acidified after the addition of the sodium pentachlorphenate. This practice brings about the precipitation of the insoluble pentachlorphenol which is then supposed to be absorbed onto the pulp or fabric. This practice may precipitate the insoluble pentachlorphenol from the soluble sodium salt, but it may not give very good adsorption to the material being treated. The insoluble pentachlorphenol may be precipitated in the water solution and only a small proportion be precipitated directly on the fiber. On the other hand, acidification of the fibrous material previous to treatment with sodium pentachlorphenate may bring about a more complete precipitation of the insoluble pentachlorphenol directly on the fiber.

The acid treatment should probably be limited in strength and the sodium pentachlorphenate applied immediately afterward to avoid damage

5

Digitized by srujanika@gmail.com

— *Leptospirosis* (which also includes *Leptospiral meningitis*) is an infection with
the bacteria *Leptospira* (which are often found in the urine of animals such
as rats or mice) and it results from oral contact with animal urine.
It may also affect humans and is transmitted via the mouth.
The main symptom of leptospirosis is jaundice (yellowing of the skin and
eyes) and kidney failure. Leptospirosis can also cause meningitis and
sepsis in children. It is usually treated with antibiotics and
can be prevented by avoiding contact with animal urine and
urine-contaminated soil, water, food, and surfaces and by wearing
protective clothing when working with animals.

With the exception of the last two paragraphs, I have omitted details of the
present state of human civilization, which are better suited to another section.

to the fiber from the acid. An acid solution less strong than the one used would probably be sufficient to give the effect desired.

Creosote provided satisfactory protection for plain cloth-backed tapes, but it did not seem to work satisfactorily on resin-coated tapes.

Creosote as a coating on plain cloth-backed tapes caused a marked initial reduction in adhesion. However, the adhesion of the coated tapes improved with time so that after 2 weeks it was better than the uncoated tapes.

